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1. Agricultural regions: The pattern of Chinese agriculture has broad regional characteristics. Among them are the two fundamental, dominant types of the rice zone in South China and the wheat zone in North China. J.L. Buck has further divided these two major zones into eight regions, namely: the spring wheat region, the winter wheat-millet region, the winter wheat-kaoliang region, the Yangtze rice-wheat region, the rice-tea region, the Szechuan rice region, the double-cropping rice region, and the southwestern rice region. In addition, agricultural regions in Mongolia, Manchuria, Tibet, and Sinkiang may also be noted. They may be designated as the Soybean-Kaoliang region in Manchuria, the Mongolian pastural region, the pasture land of Tibet and the oasis farming region in Sinkiang.

2. The spring wheat region consists of the northern parts of Hopei, Shensi, Shansi and Kansu and the southern parts of Jehol, Chahar, Suiyuan and Ningsia. The acreage of cultivated land of the region amounts to 18 percent of its total area. About 15 percent of the cultivated land is irrigated, 18 percent terraced, and 6 percent drained. The crop area per farm is 7.3 acres, and the farm population per square mile of crop area amounts to 858. Rainfall averages 14 inches per annum, and the growing season lasts about 198 days. The principal crops in the region include millet, Irish potatoes and spring wheat, with barley, kaoliang, field peas, and prose millet as supplementary crops.

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3. The winter wheat-millet region embraces a large part of Shansi, Shensi, and Kansu and corners of Honan and Hopei. This region has only 22 percent of its total area under cultivation. Of the cultivated land, over one-third has been terraced and 10 percent is under irrigation. The crop area per farm is 3.7 acres, and the farm population per square mile of crop area amounts to 1,234. Rainfall averages about 17 inches per annum. The climate in this region is similar to that in the spring wheat region, being dry, cold and windy in the winter, with, however, a slightly higher temperature and, hence, longer growing season of 225 days. The principal crops of the region are winter wheat, millet, cotton and kaoliang, and the secondary crops include barley, corn, small green bean, and soybean.

4. The winter wheat-kaoliang region includes the whole province of Shantung, a large part of Honan and Hopei, and the northern part of Kiangsu and Anhwei. Four-fifths of the region lies in the North China Plain. It is the most important agricultural region in China, having 68 percent of its total area under cultivation, the highest percentage of all the agricultural regions in the country. In fact, the acreage of cultivated land of the region constitutes 35 percent of all the cultivated land of China proper. About 10 percent of the cultivated land in the region is under irrigation, largely by wells. The crop area per farm is 5.1 acres, and the farm population per square mile of crop area amounts to 1,165. Rainfall averages 24 inches per annum, and growing season lasts about 241 days. The principal crops include winter wheat, kaoliang, cotton, millet, corn and soybean, while the secondary crops are sesame, peanuts, sweet potato, and small green bean.

5. The Yangtze rice-wheat region embraces the lands along the Yangtze River in the three provinces of Hupei, Anhwei, and Kiangsu with 35 percent of its area under cultivation. The region abounds in lakes and ponds scattered here and there thus affording irrigation facilities and making it especially adoptable to rice plantation. As much as 61 percent of the cultivated land in the region is irrigated. The crop area per farm is 3.5 acres, and the farm population per square mile of crop area is 1,360. The annual rainfall averages 42 inches, and is far more evenly distributed than that in the wheat belt in North China. The growing season lasts about ten months. The principal crop of the region is rice, with winter wheat, cotton, and barley as secondary crops. In the delta situated in the lower Yangtze where silkworms are raised, mulberry trees are grown extensively.

6. The rice-tea region includes a large part of the four provinces of Hunan, Kiangsi, Chekiang, and Fukien, with only 18 percent of its area under cultivation. Irrigation is provided for as much as 76 percent of the cultivated land in the region. The crop area per farm is 2.2 acres, and the farm population per square mile of crop area is 1,788. Rainfall averages 59 inches per annum, and is distributed quite evenly thus making the land suitable for rice and tea plantation. The growing season lasts more than ten months; in the coastal areas there is practically no frost during the year. The principal crops are rice and rapeseed. In the mountainous and foggy areas of the region, particularly those in Chekiang, Fukien, and Hunan, tea is produced on large scale. The mountain ridges are also planted to corn, wheat, sweet potatoes, and tung trees.

7. The Szechuan rice region covers the whole province of Szechuan and a small part of the provinces of Hupei, Shensi, and Kansu, with 32 percent of its area under cultivation. Of the cultivated in the region, no less than 70 percent is irrigated, especially the rice fields. In all areas in the

region, except the Chengtu Plain which is under irrigation, water is stored in the terraced fields in the winter for rice plantation in the following year. The crop area per farm is 3.1 acres, and the farm population per square mile of crop area is 1,610. Rainfall in the region averages 39 inches per year, and the humidity is very high. The growing season is more than 11 months long; in fact, there is practically no frost in the Basin throughout the year. Rice is the most important crop of the region; next come corn, wheat, and rapeseed. In the mountainous areas of the region, sweet potato, kaoliang, soybean, and the like are planted. In the central part of the region sugar cane is extensively grown. The region also abounds in tung trees and fruit trees.

8. The double-cropping rice region includes the whole province of Kwangtung, the eastern and central parts of Kwangsi, and the southern parts of Fukien and Kiangsi, with only 13 percent of its area under cultivation. Of the cultivated land in the region, 69 percent is under irrigation. The crop area per farm is 2.3 acres, and the farm population per square mile of crop area is 2,072. The annual rainfall averages as high as 69 inches, and its distribution is even. The region is free of frost, and therefore crops can grow at any time of the year. The principal crop is rice, which is used in double cropping. Sweet potatoes and sugar cane are also extensively grown. Fruits grown in subtropical regions, such as citrus fruits, banana, pear, litchi, longan, and olive are special products of the region.

9. The southwestern rice region comprises the whole province of Yunnan, a large part of Kweichow, and the western part of Kwangsi, with only seven percent of its area under cultivation. The proportion of irrigated land to cultivated area in the region amounts to 82 percent, the highest to be found in any of agricultural regions in the country. The crop area per farm is two acres, and the farm population per square mile of crop area is 2,636. The annual rainfall averages 46 inches, and is evenly distributed. The growing season lasts almost throughout the year. The principal summer crop is rice; corn ranks second in importance. The winter crop consists of barley, wheat, broad bean, field peas, and rapeseed. Trees and grasses make good growth on the mountain ridges and highlands which are largely utilized for tea plantation, except in Kweichow, where they are used mostly for growing tung trees.

10. The soybean-kaoliang region embraces the central Manchurian lowlands known variously as the Manchurian plain, the eastern highlands, the west Manchurian plain, the eastern highlands, the west Manchurian plateau, and the Liaotung Peninsula, with about 20 percent of its area under cultivation. Only five percent of the cultivated land is irrigated. In addition to the cultivated land, about one-third of the total land area is in forests, and the remainder consists of pasture and wasteland. The crop area per farm is eight acres, and the farm population per square mile of crop area is 800. Rainfall averages 25 inches per annum, and the growing season lasts five months long. The principal crop in the northern Manchurian plain of the region is soybean with Harbin as the collecting center, while that in the southern Manchurian plain of the region is Kaoliang. Other crops of the region include millet, corn, wheat, rice, and cotton.

11. The Mongolian pastural region embraces the vast grassland to the north and northwest of the loess highlands of China proper, lying next to the Great Wall and extending to the south of the Gobei Desert. It covers the four provinces of Ningsia, Suiyuan, Chahar, and Jehol, excluding their southern portions which form a large part of the spring wheat region. The soils of a large part of the Mongolian pastural region are considered fertile, but the

aridity permits very little stable agriculture. The annual rainfall averages less than 10 inches, and is concentrated almost entirely during the short summer months. The temperature varies extremely from a brief, hot summer to a long, bitter, cold winter, thus making the growing season very short. The region is known as the home of the nomads whose livelihood depends on flocks in constant search of grass. In some sections of the region where irrigation is possible, however, food crops such as spring wheat, oats, and Irish potatoes are grown.

12. Tibet is a rugged, and barren highland plain. Most of the country consists of wasteland, and the rest of the meager grazing lands of the nomads known as the Tibet pasture lands. The very limited agricultural sections are found in some of the valleys in the two provinces of eastern Tibet, namely: Sikang and Chinghai. Annual precipitation in Tibet decreases from about 30 inches in the south to approximately 10 inches in the north. The temperatures are low, with snow covering the top of the mountains practically all the year round. On account of the sparsely scattered vegetation, shepherds move their flocks up and down the slope with the season. The principal diet of the people in the region is "milk-tea".

13. The oasis farming region is located in Sinkiang, or Chinese Turkestan which, however, consists largely of barren plains and rugged mountains with only some small oases at the bases of the highlands, particularly those of the highlands that surround the Tarim Basin on three sides. These small oases in Sinkiang constitute the estimated one percent of the total area under cultivation, with the remainder largely in wasteland and partly in pasture land. Crops grown in the oasis farming region in Sinkiang include wheat, millet, corn, Irish potatoes, barley, oats, cotton, melons, and grapes.

14. In spite of the regional differences due to topography, climate, and soil conditions, Chinese agriculture presents salient features characteristic of the country as a whole. These features take their stamp essentially from the prevalence of the minute units of cultivation which, in turn, owes its origin to the overwhelming pressure of population on farm land. The large population in relation to the arable land acreage in China has necessitated the production of the greatest amount of food possible per unit of land within the limits of the present technological development and social-economic organization. This has been accomplished by growing crops for their seeds or tuber products directly for human consumption instead of indirectly through livestock production, for land devoted to grain or grain and tuber products, produces six to seven times as much food energy as land raising dairy cows while the return from poultry farming is less than one-third of the calories from milk per one acre of crop land. (Buck: L.U. PP257-258). The predominance of grain farming and the unimportance of animal husbandry, therefore, feature conspicuously in Chinese agriculture throughout the entire country.

15. Predominance of grain farming: In his sample study of 16,476 farms in the 22 provinces of China for the period 1929-1933, Buck has estimated that crops raised chiefly for their seed products, such as grain, constitute 85.4 percent of the total crop area; fibers, 3.6 percent; tubers and roots, 3.3 percent; vegetable, 1.1 percent; fruits, 0.9 percent; and, all others, 4.4 percent. Recent official estimates confirm Buck's conclusion. As of the pre-war period 1930-1937, the proportion of the acreage for food crops

Percentage distribution of the acreage of crops in China proper

	1930-1937	1948
Food crops:	95.15%	96.35%
Wheat	22.44%	24.64%
Rice	22.02%	21.28%
Millet	7.78%	7.43%
Maize	5.25%	5.72%
Barley	7.50%	7.23%
Kaoliang	5.72%	4.94%
Soybes	5.83%	5.28%
Potatoes	2.61%	4.62%
Other food crops	16.00%	15.21%
Commercial and other crops	4.85%	3.65%
Grand Total	100.00	100.00

to the total area of cultivation averages 95.15 percent, whereas in 1948 it reaches the high level of 96.35 percent. Among the various food crops, wheat ranks the first and rice ranks the second both for the pre-war and post-war periods. The acreage for commercial and industrial crops is invariably small, only 4.85 percent and 3.65 percent for the pre-war and post-war periods respectively.

Acreage of seven principal food crops in China proper for 1930-1937 and 1948

	1930-1937 Acreage	1948 Acreage	as % of 1930-1937
Wheat	50,385,000	53,438,000	106.1%
Rice	49,428,000	46,153,000	93.4%
Millet	17,460,000	16,117,000	92.3%
Barley	16,848,000	15,688,000	92.1%
Kaoliang	12,830,000	10,703,000	83.4%
Soybeans	13,090,000	11,443,000	87.4%
Maize	11,780,000	12,270,000	105.4%
Total	171,820,000	165,760,000	96.4%

16. Since the end of the second World War, the recovery of food production in China proper has been slow. As of 1948, the crop acreage for the seven principal crops, which constitutes almost three-fourths of the total area of cultivation, falls below that of the pre-war average by approximately four percent. In fact, the acreage for rice in 1948 falls below that for the pre-war average by 6.6 percent, while for Kaoliang and Soybeans it is less by as much as 16.6 percent and 12.6 percent respectively. In terms of [illegible] and Soybeans [illegible]

Production of the seven principal crops in China proper for 1930-37 and post war years compared
(Unit - 1000 metric tons)

	1930-1937	1946	1947	1948
Wheat	21,743	22,736	23,647	23,990
Rice (Paddy)	50,064	46,007	46,507	46,524
Millet	8,229	9,165	7,680	8,316
Barley	7,871	7,015	7,574	7,428
Kaoliang	7,016	5,488	5,581	6,386
Soybeans	6,093	5,351	5,479	6,043
Maize	6,497	6,950	6,724	7,497

metric tons, food production in China proper during the post-war years also falls short of the pre-war level. As shown in the table, we find a reduction of production in most of seven principal crops during the post-war years as compared with the pre-war level. An exception should be noted, however, in the case of wheat. The production of wheat in China proper has shown an increase in 1948 as compared with the pre-war level both in its acreage of cultivation and in the tonnage of harvest. In fact, the trend of wheat production in China proper since 1938 has been steadily rising, due primarily to the increasing area sown to wheat in the rice regions. This would mean an increase of wheat consumption in the diet of the people - a change definitely for the better from the viewpoint of nutrition value as well as stability of food supply because the crop is more subject to weather with, therefore, a greater variation of the supply of rice than that of wheat.

17. Grain farming also dominates in the agriculture of Manchuria and Taiwan. In Manchuria, as of 1935, 90.6 percent of the total acreage under cultivation is for food crops the most important of which are soybean (26.3 percent), Kaoliang (22.4 percent), millet (19.4 percent) and

Percentage of acreage of crops in Manchuria and Taiwan

	Manchuria 1935	Taiwan 1930-1936
Rice	1.9%	62.1%
Wheat	7.9%	
Millet	19.4%	
Maize	10.0%	
Kaoliang	22.4%	
Soybean	26.3%	
Beans	---	12.7%
Other food crops	2.7%	
Total food crops	90.6%	74.8%
Commercial & Industrial Crops	9.4%	25.2%
Grand Total	100.0%	100.0%

maize (10.0 percent). Taiwan has 74.8 percent of its total cultivated land for food crops which are the least diversified, consisting only of two crops, namely: rice, 62.1 percent, and beans, 12.7 percent. Commercial and industrial crops occupy 9.4 percent of the total cultivated land in Manchuria and 25.2 percent of the total cultivated land in Taiwan.

18. Unimportance of animal husbandry: China is a land practically devoid of pasture farming in the sense of industry or as part of arable rotation. The proportion of farm land devoted to this purpose amounts only to 1.1 percent of the total acreage of land under cultivation in China proper as compared with 47 percent in the United States of America. In fact, the percentage of crop area devoted to hay as fodder in China proper is 0.1 percent, whereas in the United States it is 21.9 percent, and in Great Britain, 53.7 percent. Only in the frontier regions of the northwest, such as Chinghai and western part of Kansu, one may find flocks of sheep and goats, herds of yak, or droves of horses dotting the hillsides or grazing on the grasslands. These hillsides and grasslands, however, constitute the nomadic pastures in the frontier; they are in no sense cultivated, nor are they owned by farmers individually or collectively. Their condition is determined by annual precipitation; no human effort, such as seeding, manuring, or irrigation is ever applied.

19. The livestock population in China, both per farm and per capita, is probably the lowest in the world. It consists largely of water buffaloes, oxen and hogs in south China and of horses, oxen, mules, donkeys, and sheep in north China. Invariably, cattle and water buffaloes are draft animals for power purposes on the farm, and hogs, sheep, and poultry are raised in small flocks by the farm families as a subsidiary employment. Rough estimates on the livestock in China (22 provinces) have been obtained by the National Agricultural Research Bureau for 1937, and are summarized as below:

Horses	3,260,000	Sheep	12,411,000
Cattle	22,981,000	Swine	59,704,000
Goats	15,744,000	Chicken	241,850,000
Donkeys	9,018,000	Ducks	55,396,000
Mules	3,624,000	Geese	9,516,000
Water buffaloes	11,574,000		

On the average, there are approximately 20 water buffaloes, 39 oxen, 6 horses, 6 mules, 17 donkeys, 20 goats, 21 sheep, 112 hogs, 409 chickens, 93 ducks, and 18 geese per one hundred farms. Not all these animals are found on any one farm; usually two or more farmers own one draft animal in partnership.

20. In terms of animal units, China has a pre-war total number of 44,700,000 animal units and a pre-war per capita number of 0.11 animal unit. The per capita animal unit in China during the post war years is lower than that of the pre-war average. The per capita number of animal unit in China is lower than that of the United States and Canada by seven fold, lower than that of the average for Asia by three fold, and lower than that of the average for the world by almost four fold. As of 1949, water buffalo and cattle comprise 62.4 percent of the total animal units in China, sheep 22.7 percent, hogs 31.2 percent, and goat 3.7 percent. Poultry which is not included in the present analysis of the animal units occupies, however, an unimportant position in China as it averages about 15 percent of the total animal units in the country. (**)

Total number and per capita number of animal units in China (22p)

	Pre-war	1947	1948	1949
Total number (in million)	44.7	37.3	38.4	38.3
Per capita no	0.11	0.09	0.09	0.09

Per capita number of animal units in China and other regions compared 1949

China (22 provinces)	0.09
USA and Canada	0.68
Asia (excluding USSR)	0.27
Europe (excluding USSR)	0.29
South America	0.17
Oceania	2.66
Africa	0.47
World average	0.34

**Factors used for the conversion of the livestock population in China and other regions into animal units are: buffalo 1.0; cattle 0.8; hogs 0.2; sheep and goats 0.1.

21. By far the greater proportion of the livestock population in China consists of labor animals, such as water buffalo and oxen, because they provide the principal source of power on the farm. Buck has estimated that labor animals form as much as 75 percent of the total animal units in China, with oxen ranking the first (34 percent) and water buffalo the second (22 percent), other working animals being donkeys (9 percent), mules (6 percent), horses (4 percent), and camels (0.1 percent). The proportion of labor animals to the total livestock population in United States is 22.1 percent, and in Great Britain 9.9 percent. The labor animal units per crop acre in China is 0.29, whereas in United States it is 0.07, and in Great Britain, 0.05, presenting, therefore, a contrast which depicts vividly the difference in the sources of power for agriculture in the respective countries. The reduction of work animals in China since the war has been an important factor in the slow progress of her post-war agricultural recovery. The number of both cattle and water buffalo has invariably fallen below the pre-war average during the post-war years of 1947, 1948, and 1949.

Number of cattle and water buffalo in China (22 provinces) for the pre-war and post-war years compared.

	Cattle	Water buffalo
Pre-war	22,981,000	11,574,000
1947	18,998,000	9,320,000
1948	18,200,000	9,460,000
1949	18,000,000	

22. Productive animals which consist of those raised mainly for their meat, hides, eggs, and other products, constitute a minor proportion of the total livestock population in China, namely: 25 percent as compared with 78 percent in United States of America and 90 percent in Great Britain. As cattle is kept more for working purposes than food, only hogs, sheep, and goats, and poultry are the principal productive animals in China. Since there had been a great decrease in the number of productive animals during the war, the post-war level is in all cases much below the pre-war average. This decrease not only means a reduction in the meat and egg consumption of the people but also a reduction in the export of animal products abroad. The four important items of animal products for export from China, namely: egg and egg-products, bristle, goat and sheepskin and sheep wool, which accounted for 28 percent of the five year average of the total export value during the pre-war period, 1933-1937, constituted only 12.5 percent of the total export value in 1947.

Number of productive animals in China (22 provinces)

	Pre-war	1947	1948	1949
Hogs	59,704,000	53,758,000	59,510,000	59,550,000
Sheep	12,411,000	9,191,000	10,450,000	10,500,000
Goat	13,744,000	13,609,000	13,976,000	
Poultry	306,762,000	248,360,000	261,500,000	

23. Previous to the war, China was among the leading exporters of eggs and egg products. The annual average export of shell egg from China for the period from 1933 to 1937 was 21 thousand tons out of a world total of 367 thousand tons, and that of egg products 56 thousand tons out of a world total of 62 thousand tons. After 1941, due to war destruction and shipping difficulties, China almost disappeared from the world egg market, but she

reappeared as an exporter since 1946 on a moderate scale. In 1946 and 1947, only four thousand and 15 thousand tons of eggs and egg products were exported respectively.

24. With the high degree of localization in food consumption, especially among the rural population, the predominance of grain farming and unimportance

Caloric and protein content of food supplies available for human consumption in China. (22 provinces)

	Pre-war	1947-48	1948-49	1949-50
Calorie supply per capita	2226	2115	2172	2020
% from cereal and tuber	76.4%	77.0%	77.0%	77.0%
Daily supply of protein per capita: total	70.8(Gramms)	65.7(GM)	66.5(GM)	61.8(GM)
Animal	5.7 "	4.5 "	4.8 "	4.8 "
% of animal protein to total:	8.05%	6.84%	7.22%	7.76%

of animal husbandry in Chinese agriculture bears most immediately on the qualitative deficiency of the great mass in China. For one thing, calories derived from cereals and tubers exceed three-fourths of the total calorie-intake which, as of the pre-war average, falls below the standard minimum intake of energy value for an adult male by more than 20 percent. (Buck's estimate - 2800 calories) For another, protective foods of high nutritive value, especially those of animal origin, are most inadequate. Although the protein intake per day, as of the pre-war average, slightly exceeds the standard minimum of 70 grams, the proportion of animal protein to the total is only eight percent. With low calorie intake and unbalanced diet, China ranks nutritionally as one of the poorest in the world. A lower level of food supply in China during the post war period in comparison with the pre-war average, as shown by the table, has caused a further deterioration of the already deficient diet of the Chinese people both qualitatively and quantitatively.

25. Under-capitalization and high ratio of labor intensity: Chinese agriculture is at once characterized by under-capitalization and a high ratio of labor intensity. Restricted by the small size and fragmentation of farms and by the availability of limited capital outlay at his disposal, a Chinese peasant suffers seriously from the inadequacy of farm equipment and scientific application. Sample studies show that the average capitalization per farm in China never in any case exceeds eight hundred dollars United States currency, of which nine-tenths goes to land and building thus leaving a practically negligible amount, if any, for the provision of equipment and scientific application. A survey of the cost of production of rice and wheat in China by the National Agricultural Research Bureau in 1943 reveals that the cost attributed to the use of farm implements and fertilizer forms a very insignificant proportion of the total.

26. Chinese farm implements are hand tools or animal-drawn tools and carts; they are primitive, crude, and clumsy. For instance, a Chinese plough does slow work, turns up the soil to the depth of only few inches and does not break the earth properly. Again, with regard to the planter used in North China, not only is it slow in sowing but also the distribution and the depth of the seeds

soun are not uniform. A test by the National Agricultural Research Bureau in 1947 on the relative efficiency of the Chinese hoe (Tsu-tur) and the US wheel hoe in the cultivation of eggplant and tobacco gives an efficiency ratio of 1:10 for the former and of 1:5 for the latter. (Shen: p. 118). In terms of area covered per day, measured in 1/15 hectare, the output of Chinese farm implements has been found to be as follows:

	Yangtze Valley	North China
Plough	3.1	4.1
Harrow	6.3	17.0
Hoe	0.9	2.5
Caterpillar water wheel	3.8-5.3	---
Sickle	1.3	2.5

Judged by western standards, therefore, the efficiency of farm implements in China is conspicuously low. Nevertheless, however, a wheat crop as large as the pre-war crop in the United States and a rice crop nearly double that of wheat are harvested each year with hand sickles.

27. The control of water and maintenance of soil fertility are the two important tasks for crop production in which a Chinese peasant, in the absence of capital outlay for adequate shipment to aid his work, has to rely solely on detailed vigilance and heavy physical labor. China is noted for her celebrated canals, reservoirs, embankments, and irrigation, some of which, such as those in Ningsia and on the Chengtu Plain in Szechuan, have been developed for over two thousand years. These devices have been developed originally by physical labor organized under the state to protect the cultivable areas from flood or drought, but they have to be kept in repair annually by the individual or cooperative labor of the peasantry. Crops under well irrigation in North China and those under pond irrigation in South China require constant care and infinite toil, lest they be scorched to death or reduced in yield by drought. From day break till evening and not infrequently even at night sometimes during the growing season, water has to be hauled up from wells as in North China in buckets by men or women or raised by a water wheel turned by a blindfolded donkey, or from ponds as in South China by means of a caterpillar water wheel operated by hand or by the feet of the peasants.

28. Soil fertility has been maintained for centuries in China, not by an extensive use of chemical manures, but by a careful conservation and application of all local refuse - nature, vegetable, animal, and human - for plant nutrients. Human feces and feces of animals; ashes from burning straw, crop stems, root crowns, wood scrap, and charcoal; ashes from waste vegetable burned for the purpose and from burned hillsides washed down by rain and from burned soil of turves or of mixed heaps of soil and weeds; the earth bricks from heated beds or k'ang common in North China; green-manure crops grown for the purpose and stubble, straw, stems, [illegible] or other residues of harvested crops; water weeds grown in ponds, lakes, and rivers in the rice region; oilseed cakes from soybeans, rapeseed, cottonseed, peanuts, tung seed, tea seed, walnuts, castor beans and sesame seeds; muds from ponds, ditches, streams, lakes and rivers which are either accumulated through erosion from higher lands or contain organic matters from dead fish, shells and weeds; bones and bone products - all these waste products and the like are made in one way or another, irrespective of the labor requirements, to find their way onto land either as they occur or through some process of fermentation. Essentially, therefore, soil fertility is maintained in China by what has been described as "farming in a circle" - the conservation of waste and its restoration to the soil.

29. Land in China is an article manufactured by man without much aid from capital equipment. The lavish use of labor in crop production, necessitated by the smallness of holdings, has raised Chinese agriculture to the art of gardening. There is probably more modification of land by man in China than any other country - modification by irrigation, drainage, terracing, and what not with the objectives of making it more productive. Largely by an economy of time as an alternative to increase of acreage which is impossible, two-thirds of the cultivated land in China produces two or more crops a year. The usual practice is for the farm to plant one crop between the rows of another, so that the first is being harvested while the second is still growing. Rice is first sown in seed beds, and later transplanted by hand in order to extend the period during which the fields are in use. Thus, by an intensive use of labor, a Chinese farmer is able to maintain a fairly high level of output in terms of land acreage. The yield of rice and wheat

	Crop yields in 100 kgs per hectare				
	Wheat	Rice (Paddy)	Barley	Maize	Millet
China					
Prewar	10.8	25.3	11.7	13.8	11.8
1948	11.2	25.2	11.8	15.0	12.9
Japan					
Prewar	18.8	36.3	20.4	14.6	12.3
1948	15.8	37.2	17.8	13.4	10.8
India					
Prewar	6.9	13.1	8.4	7.4	5.0
1948	6.6	11.7	8.8	5.9	3.7
US					
Prewar	8.7	24.7	11.6	14.0	15.0
1948	12.1	23.5	14.2	26.8	14.6
World Average					
Prewar	10.1	17.7	11.6	13.0	----
1948	11.1	16.8	11.9	18.0	----

per hectare is higher in China than the world average, and higher in China than in India and in the United States but lower in China than in Japan. The yield of barley, maize and millet per hectare, though higher in China than in India, falls below that both in Japan and United States. Stated in terms of labor, however, the agricultural productivity per capita is extremely low in China. In wheat equivalents, the productivity per capita is lower in China than the average for the world and much lower than the average for Europe,

	Agricultural productivity per capita in wheat equivalents in metric tons.	
	Pre-war	1948
China	0.25	0.23
Average for:		
Asia	0.24	0.22
Europe	1.04	0.88
North and Central America	1.80	2.57
South America	0.58	0.48
Africa	0.12	0.12
Oceania	1.94	2.38
World average	0.42	0.42

North and Central America, South America and Oceania, although it is above the average for Africa and, to a less degree, for Asia. The basic cause

for the low productivity per capita as well as for the relative high productivity per unit of land acreage is the high ratio of labor intensity in crop cultivation due primarily to the abundance of labor supply in relation to the scarcity of land and capital resources available in the country.

30. The heavy labor requirements involved in the existing methods of cultivation result in a high proportion which labor cost forms of the total cost of agricultural production despite the prevalence of low wages paid to farm laborer. Recent surveys show that labor constitutes 33 percent of the total cost of rice production, 41 percent of the total cost of wheat production, and 38 percent of the total cost of cotton production. High labor cost means low efficiency. It takes four out of every five workers in China to support the population, and still there is a deficit which has to be met annually by net imports of rice and wheat; whereas in the United States only one worker out of every six suffices to feed the population while producing a huge surplus for export.

31. The distribution of farm work in China is so uneven throughout the year as to result either in an over supply of labor or a shortage of labor. The latter occurs usually at harvest time, planting time, and during the period of irrigation. A shortage of labor delays farm operation and, thus, has the effect of reducing the yield of crops. On the other hand, there is always the redundance of farm labor in China in the winter and early spring. This redundance of agricultural labor finds expression not so much in the existence of mass unemployment as in the phenomenon of chronic under-employment. Buck's study shows that the winter months from November to February account for 80 percent of the idle time on the farm and that farm idleness averages 1.7 months for the country as a whole, with more idleness in North China than South China and more idleness in small farms than in large ones. Since the size of farms in China is so small that the income it yields is not sufficient to provide a minimum subsistence, the economic well-being of a Chinese peasant family is vitally affected by the extent to which it can find subsidiary employment to earn a supplementary income during the slack season.

- end -

721.1	IL/C	4/724.19	IL/C
722.5	3IL	4/724.17	IL/C
724.11	3IL	4/724.15	IL/C
722.5	8IL	4/724.14	IL/C
724.19	8IL	4/725.41	IL/C
721.1	8IL	723.21	193L
721.1	3IL	727.13	IL/C
724.19	3IL	727.23	IL/C
721.1	4IL	727.43	IL/C
722.5	4IL	727.34	IL/C
723.21	4IL	727.54	IL/C
621.01	IL/C	7/727.6	IL/C
621.8	IL/C	723.1	IL/C
723.21	IL/C	723.5	IL/C
4/724.11	IL/C	723.6	IL/C
		723.9	IL/C